AMSAT News Service Weekly Bulletins
Issue: ANS-330
Date: 2017-11-26
Sources: amsat-ans-2017-ans-330-weekly-hyperkitty-25b00e773e.txt

---

AMSAT NEWS SERVICE
ANS-330

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

In this edition:

* AO-91 Commissioned - Declared Open for Amateur Use!
* Fox-1B/AO-91 Facts
* Special AMSAT Membership Offer Celebrating RadFxSat/AO-91 Launch/Commissioning
* FUNcube-1 Celebrates 4th Anniversary
* Video of Launches of the Currently Orbiting FUNcube Satellites
* EcAMSat Deployed From ISS - 1200 baud Telemetry & QSL Card for Reports
* MAI-75 SSTV Over Moscow from ISS Planned for December 6-8
* UT1FG/MM Now Active
* Support AMSAT on Cyber Monday
* Changes to AMSAT-NA TLE Distribution for 11-21-2017, Object Comment
* ARISS News
* Satellite Shorts From All Over

SB SAT @ AMSAT $ANS-330.01
ANS-330 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 330.01
>From AMSAT HQ KENSINGTON, MD.
November 26, 2017
To All RADIO AMATEURS
BID: $ANS-330.01

AO-91 Commissioned - Declared Open for Amateur Use!

At 06:50 UTC November 23, 2017 @AMSAT Engineering officially commissioned AO-91 (RadFxSat/Fox-1B) Satellite. AMSAT VP of Engineering, Jery Buxton N0JY turned over operation to Mark Hammond N8MH and AMSAT Operations in a QSO on the AO-91 repeater during the pass over the Eastern U.S.

N8MH responded and declared AO-91 open for amateur use!

[ANS thanks AO-91 Ops Team for the above information]

Fox-1B/AO-91 Facts

Name(s): AO-91 Fox-1B (RadFxSat)
NASA catalog number: TBD
Launch: Not Earlier Than 21 Sept 2017
NASA ElaNa XIV Mission
JPSS-1 Delta II, Vandenberg AFB, CA
Orbit: LEO (Low Earth Orbit)
Inclination: 97.6908 (Assuming it is Object 43016)
Eccentricity: 0259769 (Assuming it is Object 43016)
Period: Approx. 95 minutes
Estimated orbital lifetime: 5+ years
Size: 10 x 10 x 10 cm (4 inch cube)
Weight: 1.3 kg (~3 pounds)
Transmit power: 400 mW (Minimum)
Downlink: 145.960 MHz FM voice
AFSK digital data up to 9600 bps
Uplink: 435.250 MHz FM voice (67.0 Hz CTCSS tone)

>From a communications standpoint Fox-1B has two major changes from AO-85. First, it will fly with a more sophisticated power control system which utilizes a Maximum Power Point Tracker to insure optimum charging of the batteries under all illuminations. This will be largely transparent to the typical user but will significantly increase the available battery life. Second, the detection of the 67.0 Hz tone has been enhanced, which will also help accommodate ground stations whose CTCSS tones may be slightly off frequency. The combination will make accessing the satellite easier and also decrease the likelihood of dropouts.

Doppler Shift Correction for Fox-1B

Correcting for Doppler shift will involve the same techniques as for AO-85, with slightly
different frequencies to prevent mutual spacecraft interference:
Receive Frequency Transmit Frequency
 (67.0 Hz Tone)
Satellite Position
145.960 MHz 435.240 MHz (Mem #1) AOS
145.960 MHz 435.245 MHz (Mem #2) Approaching
145.960 MHz 435.250 MHz (Mem #3) Passing
145.960 MHz 435.255 MHz (Mem #4) Departing
145.960 MHz 435.260 MHz (Mem #5) LOS

Note that the AFC on the receiver may be working hinting that making the above adjustments may not be necessary. AMSAT VP of Engineering Jerry Buxton N0JY states "... in ground testing with Fox-1A. We could be +/- 10 kHz and not even know it (that's how it was tested, one guy programmed the wrong frequency in his HT)." He adds the caveat,
"One station on the uplink is not the same situation as real life though."

Fox-1B Telemetry

Subaudible Telemetry
Except for a different downlink frequency, the low speed subaudible telemetry will be the same as for AO-85. It will be supported by the same FoxTelem software released for AO-85.

High Speed AFSK telemetry

There are no experiments on Fox-1B which will require the use of high speed telemetry.

[ANS thanks "Getting Started With Amateur Satellites 2107" By G. Gould Smith WA4SXM and Friends and other sources for the above information.]

Special AMSAT Membership Offer Celebrating RadFxSat/AO-91 Launch/Commissioning

As part of the preparations for the launch of RadFxSat on November 10th and the successful commissioning of AO-91 (RadFx/Fox-1B)opening it for Amateur use on November 23, AMSAT is making our “Getting Started With Amateur Satellites” book available for a limited time as a download with any paid new or renewal membership purchased via the AMSAT Store. This offer is only available with purchases completed online, and for only a limited time. A perennial favorite, Getting Started is updated every year with the latest amateur satellite information, and is the premier primer of satellite operation. The 182 page book is presented in PDF format, in full color, and covers all aspects of making your first contacts on a ham radio satellite.

Please take advantage of this offer today by visiting the AMSAT store at https://www.amsat.org/shop/ and selecting any membership option. While there, check out our other items, including the M2 LEOpack antenna system, Arrow antennas, AMSAT shirts, and other swag.

Thank you, and hear you soon on RadFxSat!

FUNcube-1 Celebrates 4th Anniversary

November 21st 2017, marked the fourth aniversary for FUNcube-1 in orbit.

FUNcube-1 was launched at 07:10 UTC on November 21st 2013 and its first signals were received immediately after deployment over the Indian Ocean by amateurs in South Africa. Since then it has been operating continuously in either its education mode or, with the transponder active, in amateur mode when in eclipse and at weekends.

The spacecraft has spent the four years in space orbiting the earth at between 640 and 580 km and has now travelled around the earth more than 20,000 times. That represents a distance travelled of approaching 500 million miles.

Up to now, each of the orbits has been spilt approximately 65% in sunlight and 35% in eclipse. This has resulted in the temperatures inside the small spacecraft varying by about 25o C during each orbit.

During the recent AMSAT Colloquium, Wouter, PA3WEG, during his presentation about the FUNcube project mentioned that the power available from the solar panels has been slowly increasing since launch. This observation led the team to do some further investigations as to the cause.

Although the launch was into a nominally Sun Synchronous orbit, over time this has drifted and the spacecraft is now entering a period when it will be in the sun for longer periods during each orbit.

The exact details are still being determined, but it seems likely that, starting from January 2018, there will be periods when the spacecraft will be in the sun for all, or almost all, of its orbits. Of course, this means that the on-board temperatures will be much higher than we have previously experienced in flight, although we have some test records from pre-flight thermal air testing that were undertaken after integration.

The key will be to discover what the equilibrium temperature will be internally. For comparison, AO85 has already "enjoyed" periods of full sun and its internal temperatures have reached up to around 55o C.

So the next few months will be quite an exciting time for the team! We remain extremely grateful to everyone is using the spacecraft for both its educational and amateur missions. Of course we are also very very grateful to those who are downloading the telemetry and uploading the data to the Data Warehouse. It continues to provide a unique record of "life on board" a 1U CubeSat in space.

FUNcube-1 / AO-73 details

TLM down link freq 145.935 MHz BPSK

Transponder:
Nominal Uplink 435.150 - 435.130 MHz LSB (Inverting) The passband may be up to 15kHz higher depending on on-board temps. Low temperature gives higher freqs!
Downlink 145.950 - 145.970 MHz USB

Please use a maximium uplink power of 5 watts to a 7 dBi gain antenna. More power is not needed to use the transponder!

Currently operating full power TLM beacon (300 mW) when in sunlight, and Transponder, plus low power (30mW) TLM beacon when in eclipse. Normally switches to Transponder over weekends and holidays

[ANS thanks Funcube.org for the above information]

Video of Launches of the Currently Orbiting FUNcube Satellites

Wouter Weggelar, PA3WEG, released a composite video showing all currently orbiting FUNcube family satellites being launched:

https://www.youtube.com/watch?v=hLevT3C5v6c&feature=youtu.be

[ANS thanks Wouter PA3WEG and AMSAT-UK for the above information]

EcAMSat Deployed From ISS - 1200 baud Telemetry & QSL Card for Reports

The E. coli AntiMicrobial Satellite (EcAMSat) mission will investigate

space microgravity effects on the antibiotic resistance of E. coli, a bacterial pathogen responsible for urinary tract infection in humans and animals. EcAMSat is being developed through a partnership between NASA's Ames Research Center and the Stanford University School of Medicine. Dr. A.C. Matin is the Stanford University Principal Investigator.

EcAMSAT was deployed from the ISS on November 20, 2017.

EcAMSat will investigate spaceflight effects on bacterial antibiotic resistance and its genetic basis. Bacterial antibiotic resistance may pose a danger to astronauts in microgravity, where the immune response is weakened. Scientists believe that the results of this experiment could help design effective countermeasures to protect astronauts' health during long-duration human space missions.

Operating at 437.100 MHz FM, the EcAMSat beacon sends an AX.25 packet every 5 seconds, similar to the format of the GeneSat-1, PharmaSat, O/OREOS, and SporeSat beacons; the packet contains data about the spacecraft systems operation.

A tracking screen, mission information, and mission status are dis-
played on the EcAMSat Mission Dashboard: http://ecamsat.engr.scu.edu/
Links to beacon decoding and packet uploading instructions are also included on the Dashboard.

An example of the EcAMSat QSL card is displayed at:
https://yc3bvg.blogspot.com/2017/11/ecamsat-qsl-cards.html

[ANS thanks the EcAMSat Team and NASA for the above information]

MAI-75 SSTV Over Moscow from ISS Planned for December 6-8

The MAI-75 folks have scheduled some SSTV activity during specific periods
each day from Dec 6-8. The times correlate to a small number of passes each
day in range of Moscow.

Dec 6, 2017
Setup and power on - 13:40-14:20 UTC
Power off - 17:05-17:15 UTC

Dec 7, 2017
Power on - 13:45-13:55 UTC
Power off - 17:30-17:40 UTC

Dec 8, 2017
Power on - 14:05-14:15 UTC
Power off and stow - 17:00-17:10 UTC

See: https://ariss-sstv.blogspot.com/

[ANS thanks ARISS for the above information]

UT1FG/MM Now Active

Yuri, UT1FG/MM, is back to sea on the Vessel Seahorse. It is currently sailing from Algiers to Morocco where it will load cargo. The plan is to sail to a USA port in the Gulf to be determined.

There are quite a few ships named Seahorse. The MMSI number is 538007572.

Yuri is using the Elk antenna but only has RG58 coax feeding it. Even so he reports working K3SZH on AO-7 today. If he doesn't find coax in Morocco, perhaps we can get some coax to him when he arrives in a USA port. So he is likely to do better on a Mode B satellite rather than one with a UHF downlink. He has keps for AO-91, AO-85 and CAS-4B.

Please wait for a while before sending your logsheets. He will likely be able to mail qsl's when he docks in the USA.

[ANS thanks John K8YSE for the above information]

Support AMSAT on Cyber Monday

With Cyber Monday approaching, please keep AMSAT in mind while making purchases on Amazon.com through AmazonSmile. AmazonSmile is a simple way to support your favorite non-profit organizations, including AMSAT. To get started, go to https://smile.amazon.com and designate AMSAT as the recipient of a percentage of your purchases by selecting “Radio Amateur Satellite Corporation.” After selecting AMSAT, and when making purchases at Amazon, be sure to navigate to https://smile.amazon.com.

[ANS thanks AMSAT Office for the above information]

Changes to AMSAT-NA TLE Distribution for 11-21-2017, Object Comment

Due to Thanksgiving being on Thursday, the AMSAT-NA TLE Distribution for this week will be today, November 21, 2017. Next week we will continue with the normal TLE distribution on each Thursday of the week. Note that, per comments below, AO-91 is most likely object 43016.

It appears that AO-91 is in the group of cubesats launched on 11-18-17 that include objects 43016, 43017, and 43018. The object 43015 that we were using for AO-91 has separated enough to be confirmed as Buccaneer RRM by 18th Space Control Squadron at Vandenburg AFB, CA. One of 18 SPCS many missions is launch analysis.

Therefore, based analysis (by Nico Janssen, (PA0DLO) and discussion by Alan Biddle (WA4SCA), Jerry Buxton (N0JY), Nico Janssen (PA0DLO), Paul Stoetzer (N8HM) and myself AO-91 is most likely object 43016. Note that these objects are still very close together and one more change could be needed. The process of identification is one of waiting for a group of objects to separate enough to isolate the one you are interested in and positively identify it's signal as matching a certain TLE set. Simple, right!

For comparison, Buccaneer (object 43015, not AO-91) is now at least

26 seconds from objects 43016, 43017, and 43018. Objects 43016, 43017, and 43018 are still about 2 seconds apart. (Analysis by Nico,PA0DLO)

[ANS thanks Ray Hoad for the above information]

[ANS thanks ******** for the above information]

ARISS News

+ A Successful contact was made between I.C. Villasanta, Villasanta Italy and College Pierre de Fermat, Toulouse, France and Astronaut Paolo Nespoli IZØJPA using Callsign NA1SS. The contact began Wed 2017-11-22 08:43:37 UTC and lasted about nine and a half minutes. Contact was telebridge via K6DUE. ARISS Mentor was Gianpietro IZ2GOJ backed up by Joseph F6ICS. Quantity of questions answered: 18 Quantity of people in attendance: approximatelt 200 Quantity of media present: local newspapers

+ A Successful contact was made between I.C. “Pascoli Forgione”, San Giovanni Rotondo, Italy and Astronaut Paolo Nespoli IZØJPA using Callsign NA1SS. The contact began 2017-11-15 11:36 UTC and lasted about nine and a half minutes. Contact was telebridge via K6DUE. ARISS Mentor was Francesco IKØWGF.

+ A Successful contact was made between Carmelita Manara, Milano, Italy and Astronaut Paolo Nespoli IZØJPA using Callsign NA1SS. The contact began 2017-11-15 11:36 UTC and lasted about nine and a half minutes. Contact was telebridge via K6DUE. ARISS Mentor was Gianpietro IZ2GOJ. Quantity of questions answered: 23 Quantity of people in attendance: 270 Quantity of media present: Newspaper and TV Additional information: Raoul Nespoli (Paolo's brother) was a guest at Milano.

+ A Successful contact was made between TX-801st Air Force JROTC at Burleson High, Burleson, Texas, USA and Astronaut Paolo Nespoli IZØJPA using Callsign NA1SS. The contact began 2017-11-13 14:50 UTC and lasted about nine and a half minutes. Contact was telebridge via W6SRJ. ARISS Mentor was Keith W5IU. Quantity of questions answered: All 19 Quantity of people in attendance: 225 Quantity of media present: local newspaper

+ A Successful contact was made between Liceo Scientifico “Valdemaro Vecchi”, Trani, Italy and Astronaut Paolo Nespoli IZØJPA using Callsign NA1SS. The contact began 2017-11-11 11:16 UTC and lasted about nine and a half minutes. Contact was telebridge via VK4KHZ. ARISS Mentor was Francesco IKØWGF. Quantity of questions answered: 14 Quantity of people in attendance: about 200 Quantity of media present: none reported

+ A Successful contact was made between I.I.S.S. “T.Fiore-C.Sylos”, Terlizzi, Italy and Astronaut Paolo Nespoli IZØJPA using Callsign NA1SS. The contact began 2017-11-11 11:16 UTC and lasted about nine and a half minutes. Contact was telebridge via VK4KHZ.
  ARISS Mentor was Francesco IKØWGF.
  Quantity of questions answered: 14
  Quantity of people in attendance: about 200
  Quantity of media present: none reported

+ A Successful contact was made between Liceo Statale “Ilaria Alpi”, Rutigliano, Italy from the University of Bari and Astronaut Paolo Nespoli IZØJPA using Callsign NA1SS. The contact began 2017-11-11 11:16 UTC and lasted about nine and a half minutes. Contact was telebridge via VK4KHZ. ARISS Mentor was Francesco IKØWGF].
  Quantity of questions answered: 14
  Quantity of people in attendance: about 200
  Quantity of media present: none reported

+ A Successful contact was made between South Florida Science Center and Aquarium, West Palm Beach, FL, USA and Astronaut Paolo Nespoli IZØJPA using Callsign NA1SS. The contact began 2017-11-06 16:17 UTC and lasted about nine and a half minutes. Contact was Direct via WS4FSC. ARISS Mentors were Steve W1HQL and Ryan W4NTR.
  Quantity of questions answered: All 12.
  Quantity of people in attendance: 100
  Quantity of media present: TV and newspaper

+ A Successful contact was made between Istituto di Istruzione Superiore “Leonardo Da Vinci”, Lanusei, Italy and Astronaut Paolo Nespoli IZØJPA using Callsign OR4ISS. The contact began 2017-11-04 10:12 UTC and lasted about nine and a half minutes. Contact was direct via ISØBWM and incorporated Ham TV.
  ARISS Mentor was Francesco IKØWGF.

+ A Successful contact was made between Liceo Artistico Melotti, Lomazzo, Italy and Astronaut Paolo Nespoli IZØJPA using Callsign IR0ISS. The contact began 2017-11-03 09:27 UTC and lasted about nine and a half minutes. Contact was telebridge via IQ5LI.
  ARISS Mentor was [NAME, Gianpietro IZ2GOJ.
  Quantity of questions answered: 15
  Quantity of people in attendance: 300
  Quantity of media present: Local TV and newspapers

+ A Successful contact was made between Liceo Scientifico ‘Francesco Cecioni”, Livorno, Italy and Astronaut Paolo Nespoli IZØJPA using Callsign IR0ISS. The contact began 2017-11-03 09:27 UTC and lasted about nine and a half minutes. Contact was direct via IQ5LI and incorporated Ham TV.
  ARISS Mentor was Francesco IKØWGF.
  Quantity of questions answered: 15
  Quantity of people in attendance: 300
  Quantity of media present: Local TV and newspapers.

+ A Successful contact was made between Asociación Civil Instituto Maria Montessori, San Cristóbel, Venezuela and Joe Acaba KE5DAR using Callsign IR0ISS. The contact began 2017-10-31 18:23 UTC and lasted about nine and a half minutes. Contact was direct via YY2CMR. ARISS Mentor was Brian VE6JBJ.
  Quantity of questions answered: 15
  Quantity of people in attendance: 650
  Quantity of media present: 44 press media representatives, regional, national, and international
  Additional information: It was wonderful. The signal was 9+40dB.

+ A Successful contact was made between Primaria e Secondaria di primo grado Istituto comprensivo Via XVI settembre, Civitavecchia, Italy and Astronaut Joe Acaba KE5DAR using Callsign NA1SS. The contact began 2017-10-30 11:20 UTC and lasted about nine and a half minutes. Contact was direct via IK0WGF and incorporated Ham TV. ARISS Mentor was Francesco IKØWGF.
  Quantity of questions answered: 16
  Quantity of people in attendance: About 200
  Quantity of media present: Video streaming was on BATC.TV
  Additional information: https://youtu.be/nhWL4xLroKU

Upcoming ARISS Contact Schedule as of 2017-11-22 07:00 UTC

I.C. Villasanta, Villasanta Italy and College Pierre de Fermat, Toulouse, France, telebridge via K6DUE
The ISS callsign is presently scheduled to be NA1SS
The scheduled astronaut is Paolo Nespoli IZØJPA
Contact is a go for: Wed 2017-11-22 08:43:37 UTC 45 deg K6DUE

Ashbury College, Ottawa, Ontario, Canada, telebridge via VK4KHZ
The ISS callsign is presently scheduled to be NA1SS
The scheduled astronaut is Joe Acaba KE5DAR
Contact is a go for: Mon 2017-11-27 18:39:58 UTC

Huntley Centennial Public School, Carp, ON, Canada, telebridge via IK1SLD
The ISS callsign is presently scheduled to be IRØISS
The scheduled astronaut is Paolo Nespoli
Contact is a go for: Tue 2017-11-28 18:46:37 UTC

S.G.B. De La Salle, Rome, Italy and Istituto Comprensivo Luigi Nono, Mira, Italy, telebridge via W6SRJ
The ISS callsign is presently scheduled to be IRØISS
The scheduled astronaut is Paolo Nespoli IZØJPA
Contact is a go for: Thu 2017-11-30 08:04:20 UTC

Bishop Hendricken High School and its sister school, St. Mary Academy -
Bay View, Warwick, RI, telebridge via IK1SLD
The ISS callsign is presently scheduled to be IRØISS
The scheduled astronaut is Paolo Nespoli
Contact is a go for: Thu 2017-11-30 17:02:09 UTC

The ISS callsign is presently scheduled to be IRØISS
The scheduled astronaut is Paolo Nespoli
Contact is a go for: Thu 2017-11-30 17:02:09 UTC

[ANS thanks ARISS, Charlie AJ9N and David AA4KN for the above information]

Satellite Shorts From All Over

+ EagleSat-1 Requests Help Listening for Beacon

  RadFxSat-1/Fox-1B AO-91's P-POD mate on the ELaNa XIV, EagleSat-1: their team is having trouble hearing their beacon on 437.645MHz. The beacon transmission timing is 1 minute. Please send reception

reports to Deborah Jackson (jacksd40 at my.erau.edu) and Steven Buck (bucks2 at my.erau.edu) ... via
[ANS thanks Jerry N0JY for the above information]

+ RSGB Space Posters

Several of @theRSGB posters promoting Amateur Radio feature Space Communications. PDF Posters are available for free download from http://tinyurl.com/ANS330-RSGB-Posters

[ANS thanks AMSAT-UK for the above information]

+ New URL for Farnham WebSDR

The SUWS LF/VHF/UHF/uW WebSDR based at Farnham near London has a new URL: http://farnham-sdr.com/ The antennas on 2m and 70cm are optimized for Satellite and High Altitude Balloon reception.

[ANS thanks AMSAT-UK for the above information]

/EX

In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
EMike McCardel, AA8EM
aa8em at amsat dot org